

Technical data

	CBSF-75-Basic	CBSF-75-Gripper
Measuring range:	20 ... 500 N	20 ... 300 N
Maximum measurement error:	± 3 % f. v.	± 5 % f. v.
Accuracy:	typ. ± 1 % f. v.	typ. ± 1 % f. v.
Capacity of internal memory:	100 single measurements	100 single measurements
Voltage supply:	integr. NiMH rechargeable batteries (2 x 1,2 V)	integr. NiMH rechargeable batteries (2 x 1,2 V)
Power consumption:	20 mA	20 mA
Interface:	USB	USB
Temperature range:	-10 ... +40 °C	-10 ... +40 °C
Relative humidity:	20 ... 90 % r. h. (non-condensing)	20 ... 90 % r. h. (non-condensing)
Protection class:	IP 20	IP 20
Spring constants (mech. filter):	75 N / mm	75 N / mm
Rise / Fall time:	≤ 1 ms	≤ 1 ms
Dimensions		
Height:	70 mm	90 mm
Measuring surface:	80 mm Ø	45 x 20 x 22 mm (l x w x h)
Incl. handle:	310 x 80 x 70 mm (l x w x h)	370 x 105 x 90 mm (l x w x h)
Weight:	1400 g	1915 g
Pressure measurement		
Accuracy:	typ. ± 10 % or less (measured at 23 °C, 65 % r. h.)	typ. ± 10 % or less (measured at 23 °C, 65 % r. h.)
Temperature range:	+20 ... +35 °C	+20 ... +35 °C
Relative humidity:	35 ... ~80 % r. h.	35 ... ~80 % r. h.
Measuring range film LLW:	50-250 N / cm ²	50-250 N / cm ²
Measuring range film LW:	250-1000 N / cm ²	250-1000 N / cm ²

CoboSafe



CBSF-75-Basic

Measurement device for a **simplified** measuring method for the testing of transient and quasi-static forces on collaborative robots

In conformance with ISO/TS 15066, ISO 10218-1 and ISO 10218-2

Version: 12/2018 - 325-2811-001_EN10 Technical changes reserved!

CoboSafe CBSF-75-Basic

More safety in common working areas for humans and robots: adherence to limit values safe and reliable with applications that are not primarily speed-orientated.

In any human-robot collaboration (HRC) without separating protective equipment, collisions between humans and robots cannot be completely ruled out. The permissible limit values for force and pressure in accordance with ISO/TS 15066 must be observed as they ensure the safe operation of HRC work places.

The CBSF-75-Basic is a force transducer, which in combination with the pressure measurement set CoboSafe-Scan employs a simplified measuring procedure. Here a measuring device is used with only one spring constant which determines the existing collision forces and pressures for different body zones. The system addresses applications that do not primarily work speed-orientated, and is sufficient for a range of different applications.

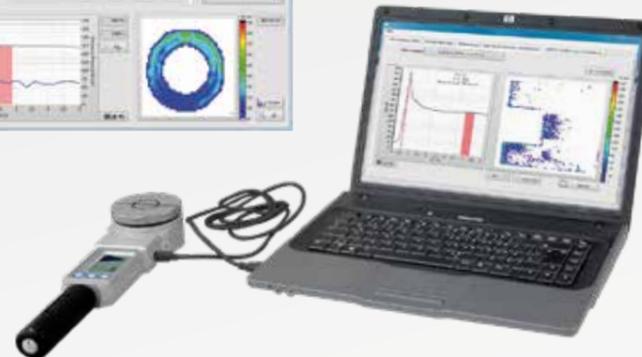
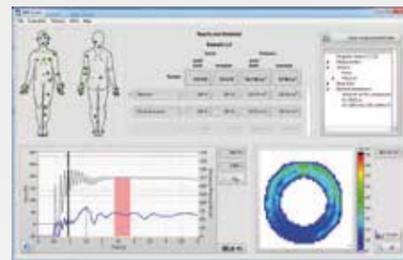
In addition to the CBSF-75-Basic force transducer, a CBSF-75-Gripper version is available, whose measuring tips allow measurement between the contact surfaces on grippers.



CoboSafe-75-Gripper

CoboSafe components:

1. PC-Software **CoboSafe-Vision**
2. Force transducer **CBSF-75-Basic** (or -Gripper)
3. Pressure measurement set **CoboSafe-scan**



1. CoboSafe-Vision Software

The CoboSafe-Vision software visualises the measured force curves and pressure images. It calculates and determines the values for the transient and quasi-static forces, and for the maximum pressure value.

An assessment of the pressure image is possible by means of the two and three-dimensional representation, as well as by using the filters. An individual reporting option is also intended, such as csv-export output.

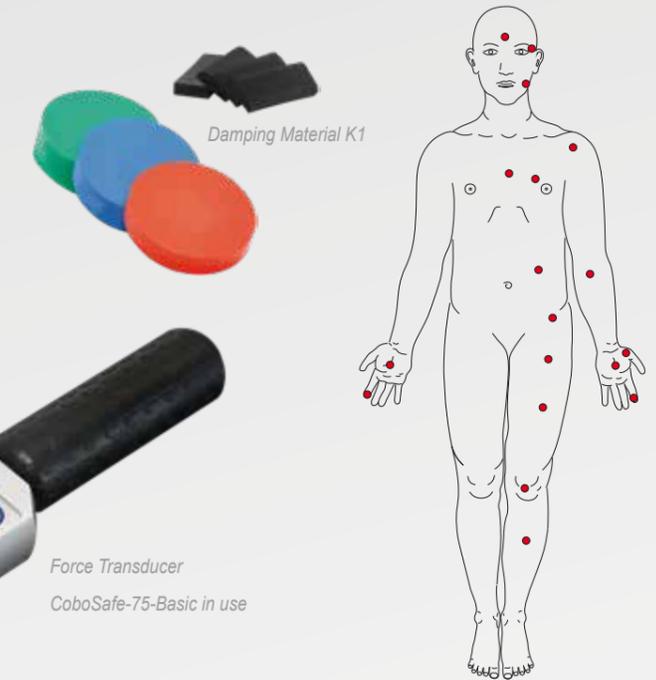
2. Force measurement: CBSF-75-Basic

The force transducer of the CBSF-75-Basic, made from aluminum, is crafted to a high-quality, and is precise and robust. It consists of a Piezo force sensor and a linear-guided measuring mechanism that guarantees an optimum measuring accuracy and reproducibility. The CBSF-75-Basic is equipped with integrated electronics for the evaluation and memory of the values measured. The transient and quasi-static values are rendered via the display and the force path is represented graphically. The force transducer includes a measuring range of up to 500 N.



Force Transducer
CoboSafe-75-Basic in use

Via the K1 damping materials, the force transducer can also be adapted to the biofidel properties of different body regions according to ISO / TS 15066 and DGUV (German Social Accident Insurance) information "FB HM-080".



3. Pressure measurement: Set CoboSafe-Scan

The set CoboSafe-Scan is based on Fujifilm Prescale films. It records the pressure distribution and the maximum pressure.

The films react to the pressure and display the pressure distribution. The pressure force is determined by the intensity of the discolouration of the pressure measuring films, to an accuracy of $\pm 10\%$. Using a scanner and a calibration-sheet, the pressure image is imported into the Software CoboSafe-Vision and evaluated automatically. The imported pressure film is converted into pressure values and the pressure image and maximum pressure are displayed as a result. The set comprises a scanner with calibration element and



Pressure Measurement Set
CoboSafe-Scan

a Prescale film unit type LLW for a pressure range of 50-250 N/cm². Fujifilm Prescale film is a rolled goods and is then cut to size for the required measuring surface. Further film types for other pressure ranges are available as an option.